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EXAMINER	
CAVALLARI, DANIEL J	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,705	SHI, FONG	
	Examiner	Art Unit	
	Daniel J. Cavallari	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/9/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 17/9/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Abstract

The abstract of the disclosure is objected to because of the use of the term "R(M/N)". Abbreviated terms should not be used rather the term should be spelled out or explained in its entirety. Correction is required. See MPEP § 608.01(b).

Drawings

Figures 1 & 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters, such as "62, 66, 70" and "69, 61, 64" respectfully, have been used to designate the same components in Figure 4. The following references were used merely as an example and were not meant to limit corrections as the same problem occurs throughout various drawings. Each drawing should be checked and corrected for this problem keeping in mind that only one reference number should be used for any given component.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so

as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to because reference characters "92" and "88" have both been used to designate the same distribution switch. This reference is used merely as an example and the problem occurs multiple times throughout the specification. The applicant is requested to check the specification and drawings for similar errors and make the necessary changes. An alternative way to reference the distribution switches would be to keep the individual reference numbers (92 & 93) and simply reference both these numbers when referring to the switches i.e. "...incorporating use of distribution switches (92,93) in accordance with an embodiment..." (See Page 11 of specification). Another possibility is to re-label using a & b designations, i.e. distribution switches 88a & 88b.

Claim Objections

Claim 1 is objected to because of the following reasons:

- The limitation R(M/N) lacks numerical limitations. Although M and N are described as "...where M of the N elements are required so that the system operates properly", this description lacks numerical limitations wherein M and N could be chosen to be any number.

Claims 2-4, 6-8, 10-18, 20-25, & 27 are objected to because of the following informalities:

- The preamble to the claims contain the phrase "as in" which should be changed to "according to". The phrase "as in" is not acceptable in conveying proper claim dependency.

  Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 7, & 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 7 recite the limitation of "... regulators comprise a plurality of output adjustments" however the specification fails to teach what is meant by comprising of "output adjustments." The limitation should be directed to a noun, seeing as the regulator is comprised of said limitation. Because of the 112 problems, claims 6 and 7 cannot be examined against prior art.

Claim 12 recites the limitation "A system as in claim 9 wherein said at least one redundant regulator circuit comprises..." It is unclear what the phrase "...wherein said at least one" is referring to. It appears either an object has been omitted or the sentence contains grammatical errors rendering it incomprehensible.

Because of the 112 problems, claim 12 can not be examined against prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, 8, 9, 11, 13-15, 16, & 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Steigerwald et al. (US 5,073,848)

Steigerwald et al. teaches:

In regard to Claims 1, 3, 4, 9, 11, 26 & 27

- A redundant power distribution system (See Abstract) with a plurality of primary regulators, read on by converters (17) and secondary regulators, read on by rectifiers (22) (See Figure 2)
- A plurality of isolation transformers (20) coupled to the regulators (22) (See Figure 2 & Column 2, Lines 47-52)

- At least one redundant device read on by secondary regulators (22), coupled to the isolation transformers (20) where M of the N elements are required so that the system operate properly (See Abstract & Figure 2)
- The plurality of regulators and isolation transformers having a non-feedback looped configuration across the isolation transformers.

In regard to Claims 5, 13, & 14

- A plurality of regulators (22) having a plurality of inputs (16) and a common output (28) (See Figure 1) each electrically coupled to the other isolation transformers through electrical line (24) (See Figure 1)

In regard to Claim 8

- First and second regulators (22) with a first and second output, respectfully, all outputs of regulators (22) in each bulk power supply (10) being coupled together by line (24).

In regard to Claims 15 & 16

- A first redundant regulator (22) coupled to a first isolation transformer (20), referring to the top most bulk power supply (10), and the regulator (22) also coupled to a second isolation transformer (20), referring to the middle bulk power supply (10), via the power supply line (24)

- A second redundant regulator (22), referring to the middle bulk power supply (10) coupled to a first and second isolation transformer by the same means as described above (See Figure 1)
- A third redundant regulator circuit (22), referring to the bottom most bulk power supply (10) coupled to the first and second isolation transformers via the power supply line (24) (See Figure 1)

Claims 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Toy (US 6,191,500)

Toy teaches:

In regard to Claim 19

- A plurality of sources (110A, 110B, 320A-C) (See Figure 3)
- A plurality of converters having a plurality of outputs comprising of regulators and an isolation transformer read on by the UPS which each comprise of an isolation transformer (1030) and regulators (See Figure 10 & Column 11, Lines 57-67)
- A distribution switch, read on by switchgear (370) coupled to the plurality of converter outputs.

In regard to Claims 20 & 21

- A first, second, and third distribution switch, read on by breakers (810A, 810B, & 810C) each coupled to there corresponding converter as well as all other converters through bus (850) (See Figure 8 and Column 14, Lines 1-11)

In regard to Claims 22, 23, & 24

- An input distribution switch, read on by switchgear (330) comprising a first and second distribution switch, read on by breakers (420A & 420B) each electrically coupled to the sources through bus (450) and coupled to the converters through the switch boards (340 & 350) (See Figure 4 & Column 6, Lines 39-64).

In regard to Claim 25

- Wherein at least one input distribution switch (420) is on (closed), power is supplied to a converter (See figures 3 & 4)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 9, 10, 17, & 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cuk et al. (US 5,570,276) and Steigerwald et al.

In regard to Claims 1, 3, 4, & 9

Cuk et al. teaches:

A primary (Q, Qa) and secondary (Q1) regulator coupled between an isolation transformer having a non-feedback loop configuration (See Figure 22 & Claim 1). Cuk et al. fails to teach a plurality of transformers and a redundant system, R(M/N).

Steigerwald et al. teaches a redundant system in which multiple power supply units are placed in parallel to create a redundant system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the redundancy taught by Steigerwald et al. with the converter design of Cuk et al. the motivation would have been to make the converter of Cuk et al. more reliable in case of a failure of one of the power sources.

In regard to Claim 10

Cuk et al. teaches further teaches

- A controller (EA) comparing a primary voltage with a reference voltage (Vref) and generating an error signal from a comparator in order to adjust the output voltage of the isolation transformer (See Figure 22)

Claims 2, 17, & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al. and Corzine (6,459,596)

Incorporating all arguments above, Steigerwald et al. teaches a redundant device, read on by rectifiers (22) with the a first devices (22) read on by the top most rectifier and a second device read on by the middle rectifier (22), each coupled to their respective primary regulator (13) but fails to teach said device comprising a switch (See Figure 2).

Corzine teaches a multilevel switched rectifier. The rectifier comprises a plurality of distribution switches, read on by the switching transistors (Column 4, Lines 43 to

Column 5, Line 7), and is used to produce multiple voltage levels (See Column 3, Lines 11-19) and. It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace bridge rectifiers (22) with the switching rectifiers taught by Corzine. The motivation would have been to provide a means to provide multiple voltage levels.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al. and Schrom et al. (US 2004/0120169 A1)

Incorporating all arguments above of the redundant power distribution system taught by Steigerwald et al., Steigerwald et al. further teaches a control means (18) for controlling the regulators (17) by PWM but fails to explicitly teach how the converter operates.

Schrom et al. teaches a controller which works by comparing a system voltage with a reference voltage and generating an error signal in which to adjust the output voltage by controlling the converter through PWM (See Paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the converter control scheme of Schrom et al. into the design of Steigerwald et al. in which to control the converter, which Steigerwald et al. was silent. The motivation would have been to effectively pulse width modulate the converter in order to properly regulate and control the output voltage.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Faulk (US 5,894,412) teaches an open-loop converter comprising an isolation transformer and multiple converters

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Cavallari whose telephone number is (571)272-8541. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DJC

November 17, 2005